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Primary Examiner — Christopher Kim

(74) *Attorney, Agent, or Firm* — Perkins Coie LLP

(57) **ABSTRACT**

Related U.S. Application Data

A deluge fire protection system for tunnels having vehicle traffic including a main water supply pipe and a horizontal spray nozzle arrangement. The horizontal spray nozzle arrangement includes a nozzle device having an inlet portion defining an internal diameter and an external nominal diameter. The horizontal spray arrangement includes a coupling arrangement between the main water supply and the nozzle device. The coupling arrangement defines a multi-direction flow path between the main water supply and the nozzle device. The multi-direction flow path has an effective length of at least eight times a diameter of the inlet portion, and a cross-sectional area along the effective length greater than the cross-sectional area defined by a diameter of the inlet portion of the body of the nozzle device. The coupling arrangement provides for water delivery to the nozzle device.

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